

# Reference Manual

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# Chapter 1

## Hierarchical Index

### 1.1 Class Hierarchy

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# Chapter 2

## Class Index

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<code>FastRangingInfo</code> . . . . .	20
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# Chapter 3

## Class Documentation

### 3.1 bw\_req\_header\_t Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **ht**: 1
- u\_char **ec**: 1
- u\_char **type**: 3
- u\_int32\_t **br**: 19
- u\_int16\_t **cid**
- u\_char **hcs**

#### 3.1.1 Detailed Description

Define bandwidth request header

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.2 Connection Class Reference

```
#include <connection.h>
```

### Public Member Functions

- **Connection** (ConnectionType\_t)
- **Connection** (ConnectionType\_t, int cid)
- **~Connection** ()
- void **setManager** (ConnectionManager \*manager)
- void **enqueue** (Packet \*p)
- void **setServiceFlow** (ServiceFlow \*sflow)
- ServiceFlow \* **getServiceFlow** ()
- int **get\_cid** ()
- ConnectionType\_t **get\_category** ()
- void **set\_category** (ConnectionType\_t value)
- ServiceFlow \* **get\_serviceflow** ()
- void **set\_serviceflow** (ServiceFlow \*value)
- ConnectionType\_t **getType** ()
- PacketQueue \* **get\_queue** ()
- Packet \* **dequeue** ()
- int **queueByteLength** ()
- int **queueLength** ()
- int **flush\_queue** ()
- void **enable\_fragmentation** (bool enable)
- bool **isFragEnable** ()
- void **insert\_entry** (struct connection \*head)
- Connection \* **next\_entry** (void) const
- void **remove\_entry** ()
- PeerNode \* **getPeerNode** ()
- void **setPeerNode** (PeerNode \*peer)
- void **updateFragmentation** (fragment\_status status, int index, int bytes)
- fragment\_status **getFragmentationStatus** ()
- int **getFragmentNumber** ()
- int **getFragmentBytes** ()
- void **setBw** (int bw)
- int **getBw** ()

### Protected Member Functions

- LIST\_ENTRY (Connection) link

#### 3.2.1 Detailed Description

Class Connection The class supports LIST.

### 3.2.2 Constructor & Destructor Documentation

#### 3.2.2.1 Connection::Connection (ConnectionType\_t)

constructor

#### 3.2.2.2 Connection::Connection (ConnectionType\_t, int *cid*)

constructor

#### 3.2.2.3 Connection::~Connection ()

destructor

### 3.2.3 Member Function Documentation

#### 3.2.3.1 Packet \* Connection::dequeue ()

Dequeue a packet from the queue

**Parameters:**

*p* The packet to enqueue

#### 3.2.3.2 void Connection::enable\_fragmentation (bool *enable*) [inline]

Enable/Disable fragmentation

#### 3.2.3.3 void Connection::enqueue (Packet \* *p*)

Enqueue the given packet

**Parameters:**

*p* The packet to enqueue

#### 3.2.3.4 int Connection::flush\_queue ()

Flush the queue

#### 3.2.3.5 ConnectionType\_t Connection::get\_category () [inline]

Get the value of category\_ The connection id

**Returns:**

the value of category\_

**3.2.3.6 int Connection::get\_cid () [inline]**

Get the value of cid The connection id

**Returns:**

the value of cid

**3.2.3.7 PacketQueue\* Connection::get\_queue () [inline]**

Get the value of queue\_ The queue for this connection

**Returns:**

the value of queue\_

**3.2.3.8 ServiceFlow\* Connection::get\_serviceflow () [inline]**

Get the value of serviceflow\_ The service flow associated with the connection

**Returns:**

the value of serviceflow\_

**3.2.3.9 int Connection::getBw ()**

Set the bandwidth requested

**Parameters:**

*bw* The bandwidth requested in bytes

**3.2.3.10 PeerNode\* Connection::getPeerNode () [inline]**

Return the peer node for this connection

**Returns:**

the peer node for this connection

**3.2.3.11 ServiceFlow\* Connection::getServiceFlow ()**

Return the service flow for this connection

**3.2.3.12 ConnectionType\_t Connection::getType () [inline]**

return the connection type

**Returns:**

The connection type

**3.2.3.13 bool Connection::isFragEnable () [inline]**

Indicates if the connection supports fragmentation

**3.2.3.14 Connection::LIST\_ENTRY (Connection) [protected]**

Pointer to next in the list

**3.2.3.15 int Connection::queueByteLength ()**

Return queue size in bytes

**Returns:**

The queue size in bytes

**3.2.3.16 int Connection::queueLength ()**

Return queue size in number of packets

**Returns:**

The number of packet in the queue

**3.2.3.17 void Connection::set\_category (ConnectionType\_t value) [inline]**

Set the value of category\_ The connection id

**Returns:**

the value of category\_

**3.2.3.18 void Connection::set\_serviceflow (ServiceFlow \* value) [inline]**

Set the value of serviceflow\_ The service flow associated with the connection

**Returns:**

the value of serviceflow\_

**3.2.3.19 void Connection::setBw (int bw)**

Set the bandwidth requested

**Parameters:**

*bw* The bandwidth requested in bytes

**3.2.3.20 void Connection::setManager (ConnectionManager \* manager)**

Set the connection manager

**Parameters:**

*manager* The Connection manager

**3.2.3.21 void Connection::setPeerNode (PeerNode \* *peer*) [inline]**

Set the peer node for this connection

**Parameters:**

*the* peer node for this connection

**3.2.3.22 void Connection::setServiceFlow (ServiceFlow \* *sflow*)**

Set the service flow for this connection

**Parameters:**

*sflow* The service flow for this connection

**3.2.3.23 void Connection::updateFragmentation (fragment\_status *status*, int *index*, int *bytes*)**

Update the fragmentation information

**Parameters:**

*status* The new fragmentation status

*index* The new fragmentation index

*bytes* The number of bytes

The documentation for this class was generated from the following files:

- connection.h
- connection.cc

### 3.3 ConnectionManager Class Reference

```
#include <connectionmanager.h>
```

#### Public Member Functions

- **ConnectionManager (Mac802\_16 \*mac)**
- **void add\_connection (Connection \*con, bool uplink)**
- **void remove\_connection (Connection \*connection)**
- **void remove\_connection (int cid)**
- **Connection \* get\_connection (int cid, bool uplink)**
- **Connection \* get\_up\_connection ()**
- **Connection \* get\_down\_connection ()**
- **void flush\_queues ()**

#### Protected Member Functions

- **Mac802\_16 \* getMac ()**

#### Friends

- class **Connection**

#### 3.3.1 Detailed Description

Class ConnectionManager The class handles the list of connections for a Mac 802.16

#### 3.3.2 Constructor & Destructor Documentation

##### 3.3.2.1 ConnectionManager::ConnectionManager (*Mac802\_16 \* mac*)

###### Parameters:

*mac* The mac where the manager belongs

#### 3.3.3 Member Function Documentation

##### 3.3.3.1 void ConnectionManager::add\_connection (Connection \* *con*, bool *uplink*)

Add a connection

###### Parameters:

*con* The connection to add

*incoming* true if it is an uplink connection

##### 3.3.3.2 void ConnectionManager::flush\_queues ()

Flush the queues. This can be called after switching BS.

**3.3.3.3 Connection \* ConnectionManager::get\_connection (int *cid*, bool *uplink*)**

Return the connection with the given cid and direction

**Parameters:**

*cid* The connection id

*incoming* specifies the direction of the connection

**3.3.3.4 Connection\* ConnectionManager::get\_down\_connection () [inline]**

Return the head of the outgoing connection list

**3.3.3.5 Connection\* ConnectionManager::get\_up\_connection () [inline]**

Return the head of the incoming connection list

**3.3.3.6 Mac802\_16\* ConnectionManager::getMac () [inline, protected]**

Get the value of mac\_ The Mac where this object is located

**Returns:**

the value of mac\_

**3.3.3.7 void ConnectionManager::remove\_connection (int *cid*)**

Remove connection by CID, both directions.

**Parameters:**

*cid* The connection id

**3.3.3.8 void ConnectionManager::remove\_connection (Connection \* *connection*)**

Remove the given connection

**Parameters:**

*connection* Remove the given connection

The documentation for this class was generated from the following files:

- connectionmanager.h
- connectionmanager.cc

## 3.4 DestClassifier Class Reference

```
#include <destclassifier.h>
```

### Public Member Functions

- **DestClassifier ()**
- **DestClassifier (Mac802\_16 \*mac)**
- **DestClassifier (Mac802\_16 \*mac, int priority\_)**
- **int classify (Packet \*p)**

#### 3.4.1 Detailed Description

This class classifies the packet based on the destination address

#### 3.4.2 Constructor & Destructor Documentation

##### 3.4.2.1 DestClassifier::DestClassifier ()

Create a classifier in the given mac

##### 3.4.2.2 DestClassifier::DestClassifier (Mac802\_16 \* *mac*)

Create a classifier in the given mac

**Parameters:**

*mac* The mac where it is located

##### 3.4.2.3 DestClassifier::DestClassifier (Mac802\_16 \* *mac*, int *priority\_*)

Create a classifier in the given mac

**Parameters:**

*mac* The mac where it is located

*priority* The classifier's priority

#### 3.4.3 Member Function Documentation

##### 3.4.3.1 int DestClassifier::classify (Packet \* *p*)

Classify a packet and return the CID to use (or -1 if unknown)

**Parameters:**

*p* The packet to classify

**Returns:**

The CID or -1

The documentation for this class was generated from the following files:

- destclassifier.h
- destclassifier.cc

## 3.5 DlTimer Class Reference

```
#include <mac802_16timer.h>
```

### Public Member Functions

- **DlTimer (Mac802\_16 \*m)**
- void **expire (Event \*e)**

#### 3.5.1 Detailed Description

Timer to indicate a new Downlink frame

The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.6 FastRangingInfo Class Reference

```
#include <mac802_16BS.h>
```

### Public Member Functions

- **FastRangingInfo** (int frame, int macAddr)
- int **frame** ()
- int **macAddr** ()
- void **insert\_entry** (struct fastRangingInfo \*head)
- **FastRangingInfo \* next\_entry** (void) const
- void **remove\_entry** ()

### Protected Member Functions

- **LIST\_ENTRY (FastRangingInfo) link**

#### 3.6.1 Detailed Description

Store information about a fast ranging request to send

The documentation for this class was generated from the following file:

- mac802\_16BS.h

## 3.7 ffb\_subheader\_s Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char alloc\_offset:6
- u\_char type:2

#### 3.7.1 Detailed Description

Fast Feedback

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.8 frag\_subheader\_s Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- char **fc**: 2
- char **fsn**: 3
- u\_int16\_t **sn**:11
- u\_char **rsv**:3

#### 3.8.1 Detailed Description

Fragmentation subheader

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.9 gen\_mac\_header\_t Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **ht**: 1
- u\_char **ec**: 1
- u\_char **type\_mesh**: 1
- u\_char **type\_arqfb**: 1
- u\_char **type\_ext**: 1
- u\_char **type\_frag**: 1
- u\_char **type\_pck**: 1
- u\_char **type\_fbgm**: 1
- u\_char **rsv1**: 1
- u\_char **ci**: 1
- u\_char **eks**: 2
- u\_char **rsv2**: 1
- u\_int16\_t **len**: 11
- u\_int16\_t **cid**
- u\_char **hcs**

#### 3.9.1 Detailed Description

Define generic MAC header

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.10 grant\_map\_ugs\_s Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **si**:1
- u\_char **pm**:1
- u\_int16\_t **rsv**:14

#### 3.10.1 Detailed Description

Grant Management subheader

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.11 **hdr\_mac802\_16** Struct Reference

```
#include <mac802_16pkt.h>
```

### Static Public Member Functions

- static int & **offset** ()
- static **hdr\_mac802\_16** \* **access** (const Packet \*p)

### Public Attributes

- **phy\_info\_t phy\_info**
- **gen\_mac\_header\_t header**
- **frag\_subheader\_s frag\_subheader**
- **pack\_subheader\_s pack\_subheader**
- **grant\_subheader\_s grant\_subheader**
- **ffb\_subheader\_s ffb\_subheader**
- **arq\_fb\_ie arq\_fb\_ie** [MAX\_ARQ\_FB\_IE]

### Static Public Attributes

- static int **offset\_**

#### 3.11.1 Detailed Description

Define structure for packet information

The documentation for this struct was generated from the following files:

- mac802\_16pkt.h
- mac802\_16.cc

## 3.12 InitTimer Class Reference

```
#include <mac802_16timer.h>
```

### Public Member Functions

- **InitTimer (Mac802\_16 \*m)**
- **void expire (Event \*e)**

#### 3.12.1 Detailed Description

Timer to indicate a new uplink frame

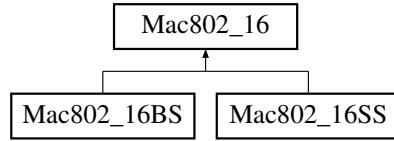
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

### 3.13 Mac802\_16 Class Reference

```
#include <mac802_16.h>
```

Inheritance diagram for Mac802\_16::



#### Public Member Functions

- **Mac802\_16 ()**
- **ConnectionManager \* getCManger ()**
- **ServiceFlowHandler \* getServiceHandler ()**
- **WimaxScheduler \* getScheduler ()**
- **double getFrameDuration ()**
- **void setFrameDuration (double duration)**
- **int getFrameNumber ()**
- **station\_type\_t getNodeType ()**
- **virtual int command (int argc, const char \*const \*argv)**
- **void setChannel (int channel)**
- **int getChannel ()**
- **int getChannel (double freq)**
- **void nextChannel ()**
- **virtual void sendDown (Packet \*p)**
- **virtual void transmit (Packet \*p)**
- **virtual void sendUp (Packet \*p)**
- **virtual void receive ()**
- **void setNotify\_upper (bool notify)**
- **PeerNode \* getPeerNode\_head ()**
- **PeerNode \* getPeerNode (int index)**
- **void addPeerNode (PeerNode \*node)**
- **void removePeerNode (PeerNode \*node)**
- **int getNbPeerNodes ()**
- **virtual void start\_dlsubframe ()**
- **virtual void start\_ulsubframe ()**
- **virtual void expire (timer\_id id)**
- **FrameMap \* getMap ()**
- **OFDMPhy \* getPhy ()**

#### Public Attributes

- **Mac802\_16MIB macmib\_**
- **Phy802\_16MIB phymib\_**

## Protected Member Functions

- virtual void **init** ()
- Packet \* **getPacket** ()
- int **getFrameDurationCode** ()
- void **setFrameDurationCode** (int code)
- void **addClassifier** (SDUClassifier \*)
- int **classify** (Packet \*p)
- virtual void **update\_watch** (StatWatch \*watch, double value)
- virtual void **update\_throughput** (ThroughputWatch \*watch, double size)
- void **mac\_log** (Packet \*p)
- void **setStationType** (station\_type\_t type)

## Protected Attributes

- WimaxScheduler \* **scheduler\_**
- InitTimer \* **initTimer\_**
- FrameMap \* **map\_**
- int **frame\_number\_**
- DITimer \* **dl\_timer\_**
- UITimer \* **ul\_timer\_**
- StatWatch **delay\_watch\_**
- double **last\_tx\_delay\_**
- StatWatch **jitter\_watch\_**
- StatWatch **loss\_watch\_**
- ThroughputWatch **rx\_data\_watch\_**
- ThroughputWatch **rx\_traffic\_watch\_**
- ThroughputWatch **tx\_data\_watch\_**
- ThroughputWatch **tx\_traffic\_watch\_**
- StatTimer \* **rx\_data\_timer\_**
- StatTimer \* **rx\_traffic\_timer\_**
- StatTimer \* **tx\_data\_timer\_**
- StatTimer \* **tx\_traffic\_timer\_**
- int **print\_stats\_**
- NsObject \* **logtarget\_**
- Packet \* **pktRx\_**
- Packet \* **pktBuf\_**
- station\_type\_t **type\_**
- WimaxRxTimer **rxTimer\_**
- bool **collision\_**
- bool **notify\_upper\_**
- double **last\_tx\_time\_**
- double **last\_tx\_duration\_**
- ConnectionManager \* **connectionManager\_**
- ServiceFlowHandler \* **serviceFlowHandler\_**
- peerNode \* **peer\_list\_**
- int **nb\_peer\_**
- NeighborDB \* **nbr\_db\_**

## Friends

- class **PeerNode**
- class **SDUClassifier**
- class **WimaxFrameTimer**
- class **FrameMap**
- class **WimaxScheduler**
- class **BSScheduler**
- class **SSscheduler**
- class **ServiceFlowHandler**
- class **Connection**
- class **StatTimer**
- class **InitTimer**

### 3.13.1 Detailed Description

Class implementing IEEE 802\_16

### 3.13.2 Constructor & Destructor Documentation

#### 3.13.2.1 Mac802\_16::Mac802\_16 ()

Creates a Mac 802.16 The MAC 802.16 is a superclass for the BS and SS MAC It should not be instanciated

### 3.13.3 Member Function Documentation

#### 3.13.3.1 void Mac802\_16::addClassifier (SDUClassifier \*) [protected]

Add a classifier

#### 3.13.3.2 void Mac802\_16::addPeerNode (PeerNode \* *node*)

Add the peer node

##### Parameters:

*The* peer node to add

#### 3.13.3.3 int Mac802\_16::classify (Packet \* *p*) [protected]

Run the packet through the classifiers to find the proper connection

##### Parameters:

*p* the packet to classify

**3.13.3.4 int Mac802\_16::command (int *argc*, const char \*const \**argv*) [virtual]**

Interface with the TCL script

**Parameters:**

*argc* The number of parameter

*argv* The list of parameters

Reimplemented in **Mac802\_16BS** (p. 86), and **Mac802\_16SS** (p. 95).

**3.13.3.5 void Mac802\_16::expire (timer\_id *id*) [virtual]**

Called when a timer expires

**Parameters:**

*The* timer ID

Reimplemented in **Mac802\_16BS** (p. 86), and **Mac802\_16SS** (p. 95).

**3.13.3.6 int Mac802\_16::getChannel (double *freq*)**

Return the channel number for the given frequency

**Parameters:**

*freq* The frequency

**Returns:**

The channel number of -1 if the frequency does not match

**3.13.3.7 int Mac802\_16::getChannel ()**

Return the channel index

**Returns:**

The channel

**3.13.3.8 ConnectionManager\* Mac802\_16::getCManager () [inline]**

Return the connection manager

**Returns:**

the connection manager

**3.13.3.9 double Mac802\_16::getFrameDuration () [inline]**

Return the frame duration (in s)

**Returns:**

the frame duration (in s)

**3.13.3.10 int Mac802\_16::getFrameNumber ()**

Return the current frame number

**Returns:**

the current frame number

**3.13.3.11 FrameMap\* Mac802\_16::getMap () [inline]**

Return the MAP of the current frame

**Returns:**

the MAP of the current frame

**3.13.3.12 int Mac802\_16::getNbPeerNodes ()**

Return the number of peer nodes

**3.13.3.13 station\_type\_t Mac802\_16::getNodeType ()**

Return the type of MAC

**Returns:**

the type of node

**3.13.3.14 Packet \* Mac802\_16::getPacket () [protected]**

Return a new allocated packet

**Returns:**

A newly allocated packet

**3.13.3.15 PeerNode \* Mac802\_16::getPeerNode (int *index*)**

Return the peer node that has the given address

**Parameters:**

*index* The address of the peer

**Returns:**

The peer node that has the given address

**3.13.3.16 PeerNode\* Mac802\_16::getPeerNode\_head () [inline]**

Return the head of the peer nodes list

**Returns:**

the head of the peer nodes list

**3.13.3.17 OFDMPhy \* Mac802\_16::getPhy ()**

Return the PHY layer

**Returns:**

The physical layer

**3.13.3.18 WimaxScheduler\* Mac802\_16::getScheduler () [inline]**

Return the Scheduler

**Returns:**

the Scheduler

**3.13.3.19 ServiceFlowHandler\* Mac802\_16::getServiceHandler () [inline]**

Return The Service Flow handler

**Returns:**

The Service Flow handler

**3.13.3.20 void Mac802\_16::init () [protected, virtual]**

Init the MAC

Reimplemented in **Mac802\_16BS** (p. 86), and **Mac802\_16SS** (p. 95).

**3.13.3.21 void Mac802\_16::mac\_log (Packet \* p) [inline, protected]**

Log the packet. Private in Mac so we need to redefine it

**Parameters:**

*p* The received packet

**3.13.3.22 void Mac802\_16::nextChannel ()**

Set the channel to the next from the list Used at initialisation and when loosing signal

**3.13.3.23 void Mac802\_16::receive () [virtual]**

Process the packet after receiving last bit

Reimplemented in **Mac802\_16BS** (p. 87), and **Mac802\_16SS** (p. 96).

**3.13.3.24 void Mac802\_16::removePeerNode (PeerNode \* node)**

Remove a peer node

**Parameters:**

*The* peer node to remove

**3.13.3.25 void Mac802\_16::sendDown (Packet \* *p*) [virtual]**

Process packets going out

**Parameters:**

*p* The packet to transmit

Reimplemented in **Mac802\_16BS** (p. 87), and **Mac802\_16SS** (p. 96).

**3.13.3.26 void Mac802\_16::sendUp (Packet \* *p*) [virtual]**

Process incoming packets

**Parameters:**

*p* The received packet

Reimplemented in **Mac802\_16BS** (p. 87), and **Mac802\_16SS** (p. 96).

**3.13.3.27 void Mac802\_16::setChannel (int *channel*)**

Change the channel

**Parameters:**

*channel* The new channel

**3.13.3.28 void Mac802\_16::setFrameDuration (double *duration*) [inline]**

Set the frame duration

**Parameters:**

*duration* The frame duration (in s)

**3.13.3.29 void Mac802\_16::setFrameDurationCode (int *code*) [protected]**

Set the frame duration using code

**Parameters:**

*code* The frame duration code

**3.13.3.30 void Mac802\_16::setNotify\_upper (bool *notify*)**

Set the variable used to find out if upper layers must be notified to send packets. During scanning we do not want upper layers to send packet to the mac.

**Parameters:**

*notify* Value indicating if we want to receive packets from upper layers

**3.13.3.31 void Mac802\_16::setStationType (station\_type\_t *type*) [protected]**

Set the node type

**Parameters:**

*type* The station type

**3.13.3.32 void Mac802\_16::start\_dlsubframe () [virtual]**

Start a new DL subframe

Reimplemented in **Mac802\_16BS** (p. 88), and **Mac802\_16SS** (p. 97).

**3.13.3.33 void Mac802\_16::start\_ulsbframe () [virtual]**

Start a new UL subframe

Reimplemented in **Mac802\_16BS** (p. 88), and **Mac802\_16SS** (p. 97).

**3.13.3.34 void Mac802\_16::transmit (Packet \* *p*) [virtual]**

Process packets going out

**Parameters:**

*p* The packet to transmit

Reimplemented in **Mac802\_16BS** (p. 88), and **Mac802\_16SS** (p. 97).

**3.13.3.35 void Mac802\_16::update\_throughput (ThroughputWatch \* *watch*, double *size*) [protected, virtual]**

Update the given timer and check if thresholds are crossed

**Parameters:**

*watch* the stat watch to update

*size* the size of packet received

Reimplemented in **Mac802\_16BS** (p. 88), and **Mac802\_16SS** (p. 97).

**3.13.3.36 void Mac802\_16::update\_watch (StatWatch \* *watch*, double *value*) [protected, virtual]**

Update the given timer and check if thresholds are crossed

**Parameters:**

*watch* the stat watch to update

*value* the stat value

Reimplemented in **Mac802\_16BS** (p. 88), and **Mac802\_16SS** (p. 97).

### 3.13.4 Member Data Documentation

**3.13.4.1 bool Mac802\_16::collision\_ [protected]**

Indicates if a collision occured

**3.13.4.2 ConnectionManager\* Mac802\_16::connectionManager\_ [protected]**

The class to handle connections

**3.13.4.3 StatWatch Mac802\_16::delay\_watch\_ [protected]**

Statistics for queueing delay

**3.13.4.4 DlTimer\* Mac802\_16::dl\_timer\_ [protected]**

Timer used to mark the begining of downlink subframe (i.e new frame)

**3.13.4.5 int Mac802\_16::frame\_number\_ [protected]**

Current frame number

**3.13.4.6 InitTimer\* Mac802\_16::initTimer\_ [protected]**

Timer to init the MAC

**3.13.4.7 StatWatch Mac802\_16::jitter\_watch\_ [protected]**

Statistics for delay jitter

**3.13.4.8 double Mac802\_16::last\_tx\_delay\_ [protected]**

Delay for last packet

**3.13.4.9 double Mac802\_16::last\_tx\_duration\_ [protected]**

Last transmission duration

**3.13.4.10 double Mac802\_16::last\_tx\_time\_ [protected]**

Last time a packet was sent

**3.13.4.11 NsObject\* Mac802\_16::logtarget\_ [protected]**

Object to log received packets. Private in Mac so we need to redefine it

**3.13.4.12 StatWatch Mac802\_16::loss\_watch\_ [protected]**

Stats for packet loss

**3.13.4.13 Mac802\_16MIB Mac802\_16::macmib\_**

The MAC MIB

**3.13.4.14 FrameMap\* Mac802\_16::map\_ [protected]**

The map of the frame

**3.13.4.15 int Mac802\_16::nb\_peer\_ [protected]**

Number of peer in the list

**3.13.4.16 NeighborDB\* Mac802\_16::nbr\_db\_ [protected]**

Database of neighboring BS

**3.13.4.17 bool Mac802\_16::notify\_upper\_ [protected]**

Indicate if upper layer must be notified to send more packets

**3.13.4.18 struct peerNode\* Mac802\_16::peer\_list\_ [protected]**

List of connected peer nodes. Only one for SSs.

**3.13.4.19 Phy802\_16MIB Mac802\_16::phymib\_**

The Physical layer MIB

**3.13.4.20 Packet\* Mac802\_16::pktBuf\_ [protected]**

A packet buffer used to temporary store a packet received by upper layer. Used during scanning

**3.13.4.21 Packet\* Mac802\_16::pktRx\_ [protected]**

Packet being received

**3.13.4.22 int Mac802\_16::print\_stats\_ [protected]**

Indicates if the stats must be printed

**3.13.4.23 StatTimer\* Mac802\_16::rx\_data\_timer\_ [protected]**

Timers to continuously poll stats in case it is not updated by sending or receiving packets

**3.13.4.24 ThroughputWatch Mac802\_16::rx\_data\_watch\_ [protected]**

Stats for incoming data throughput

**3.13.4.25 ThroughputWatch Mac802\_16::rx\_traffic\_watch\_ [protected]**

Stats for incoming traffic throughput (data+management)

**3.13.4.26 WimaxRxTimer Mac802\_16::rxTimer\_ [protected]**

Receiving timer

**3.13.4.27 WimaxScheduler\* Mac802\_16::scheduler\_ [protected]**

The packet scheduler

**3.13.4.28 ServiceFlowHandler\* Mac802\_16::serviceFlowHandler\_ [protected]**

The module that handles flow requests

**3.13.4.29 ThroughputWatch Mac802\_16::tx\_data\_watch\_ [protected]**

Stats for outgoing data throughput

**3.13.4.30 ThroughputWatch Mac802\_16::tx\_traffic\_watch\_ [protected]**

Stats for outgoing traffic throughput (data+management)

**3.13.4.31 UlTimer\* Mac802\_16::ul\_timer\_ [protected]**

Timer used to mark the begining of uplink subframe

The documentation for this class was generated from the following files:

- mac802\_16.h
- mac802\_16.cc

### 3.14 mac802\_16\_dcd\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **dcid**
- u\_char **config\_change\_count**
- u\_char **frame\_duration\_code**
- u\_int32\_t **frame\_number**: 24
- u\_char **ttg**
- u\_char **rtg**
- u\_int32\_t **frequency**
- u\_int32\_t **nb\_prof**
- mac802\_16\_dcd\_profile **profiles** [MAX\_PROFILE]

#### 3.14.1 Detailed Description

DCD frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.15 mac802\_16\_dcd\_profile Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **diuc**: 4
- u\_int32\_t **frequency**
- u\_char **fec**

#### 3.15.1 Detailed Description

Defines DCD profile

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.16 mac802\_16\_dl\_map\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- **u\_char type**
- **u\_char dcd\_count**
- **int bsid**
- **u\_int32\_t nb\_ies**
- **mac802\_16\_dlmap\_ie ies [MAX\_MAP\_IE]**

#### 3.16.1 Detailed Description

DL\_MAP frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.17 mac802\_16\_dlmap\_ie Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_int16\_t **cid**
- u\_char **diuc**: 4
- u\_char **preamble**: 1
- u\_int16\_t **start\_time**: 11

#### 3.17.1 Detailed Description

Defines DL\_MAP IE (see p462.)

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.18 mac802\_16\_dsa\_ack\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_int16\_t **transaction\_id**
- u\_char **confirmation\_code**
- bool **uplink**

#### 3.18.1 Detailed Description

DSA Acknowledgement frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.19 mac802\_16\_dsa\_req\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_int16\_t **transaction\_id**
- bool **uplink**
- u\_int16\_t **cid**

#### 3.19.1 Detailed Description

DSA request frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.20 mac802\_16\_dsa\_rsp\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_int16\_t **transaction\_id**
- u\_char **confirmation\_code**
- bool **uplink**
- u\_int16\_t **cid**

#### 3.20.1 Detailed Description

DSA response frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.21 mac802\_16\_fast\_ranging\_ie Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- int **mac\_addr**
- u\_char **uiuc**: 4
- u\_int16\_t **duration**: 12

#### 3.21.1 Detailed Description

fast Ranging IE (802.16e)

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.22 mac802\_16\_mob\_asc\_rep\_bs\_full Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- int **neighbor\_bs\_id**
- uint32\_t **timing\_adjust**
- u\_char **power\_level\_adjust**
- uint32\_t **offset\_freq\_adjust**
- u\_char **rng\_status**
- u\_char **service\_level\_prediction**

#### 3.22.1 Detailed Description

Code BS using address in association result report

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.23 mac802\_16\_mob\_asc\_rep\_bs\_index Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **neighbor\_bs\_index**
- uint32\_t **timing\_adjust**
- u\_char **power\_level\_adjust**
- uint32\_t **offset\_freq\_adjust**
- u\_char **rng\_status**
- u\_char **service\_level\_prediction**

#### 3.23.1 Detailed Description

Code BS using index in association result report

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.24 mac802\_16\_mob\_asc\_rep\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **n\_recommended\_bs\_index**
- u\_char **ccc\_mob\_nbr\_adv**
- **mac802\_16\_mob\_asc\_rep\_bs\_index rec\_bs\_index** [MAX\_NBR]
- u\_char **n\_recommended\_bs\_full**
- **mac802\_16\_mob\_asc\_rep\_bs\_full rec\_bs\_full** [MAX\_NBR]

#### 3.24.1 Detailed Description

Association result report frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.25 mac802\_16\_mob\_bsho\_req\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_char **net\_assisted\_ho\_supported**: 1
- u\_char **mode**: 3
- u\_char **ho\_op\_mode**: 1
- u\_char **n\_recommended**
- u\_char **resource\_retain\_flag**: 1
- **mac802\_16\_mob\_bsho\_req\_mode\_000 n\_rec []**
- u\_char **tmp\_bsid**: 3
- u\_char **ak\_change\_indicator**: 1
- u\_char **n\_cids**
- uint16\_t **cids [MAX\_NBR]**
- u\_char **n\_saids**
- uint16\_t **saids [MAX\_NBR]**
- u\_char **n\_new\_bs**: 3
- **mac802\_16\_mob\_bsho\_req\_mode\_new\_bs new\_bs [MAX\_NBR]**
- u\_char **n\_current\_bs**: 3
- **mac802\_16\_mob\_bsho\_req\_mode\_current\_bs current\_bs [MAX\_NBR]**
- **mac802\_16\_mob\_bsho\_req\_mode\_new\_bs2 new\_bs2 [MAX\_NBR]**
- **mac802\_16\_mob\_bsho\_req\_mode\_new\_bs3 new\_bs3 [MAX\_NBR]**
- u\_char **action\_time**: 7

### 3.25.1 Detailed Description

BSHO request frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.26 mac802\_16\_mob\_bsho\_req\_mode\_000 Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bsid**
- u\_char **service\_level\_prediction**
- u\_char **preamble\_index**
- u\_char **ho\_process\_optimization**
- u\_char **net\_assisted\_ho\_supported**: 1
- u\_char **ho\_id\_included\_indicator**: 1
- u\_char **ho\_autho\_policy\_indicator**: 1
- u\_char **ho\_id**
- u\_char **ho\_autho\_policy\_support**

#### 3.26.1 Detailed Description

Code request in mode 000 (HO request)

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.27 mac802\_16\_mob\_bsho\_req\_mode\_current\_bs Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char temp\_bsid: 3

#### 3.27.1 Detailed Description

Structure for BSHO request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.28 mac802\_16\_mob\_bsho\_req\_mode\_new\_bs Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bsid**
- u\_char **temp\_bsid**: 3

#### 3.28.1 Detailed Description

Structure for BSHO request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.29 mac802\_16\_mob\_bsho\_req\_mode\_new\_bs2 Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bsid**
- u\_char **temp\_bsid**: 3
- uint16\_t **new\_cid** [MAX\_NBR]
- uint16\_t **new\_said** [MAX\_NBR]

#### 3.29.1 Detailed Description

Structure for BSHO request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.30 mac802\_16\_mob\_bsho\_req\_mode\_new\_bs3 Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bsid**
- u\_char **temp\_bsid**: 3
- uint16\_t **new\_cid** [MAX\_NBR]
- uint16\_t **new\_said** [MAX\_NBR]
- int **cqich\_id**
- u\_char **feedback\_channel\_off**: 6
- u\_char **period**: 2
- u\_char **frame\_offset**: 3
- u\_char **duration**: 3
- u\_char **mimo\_permutation\_feedback**: 2

#### 3.30.1 Detailed Description

Structure for BSHO request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.31 mac802\_16\_mob\_bsho\_rsp\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **mode**: 3
- u\_char **ho\_operation\_mode**: 1
- u\_char **n\_recommended**
- u\_char **resource\_retain\_flag**: 1
- mac802\_16\_mob\_bsho\_rsp\_rec n\_rec [MAX\_NBR]
- u\_char **tmp\_bsid**: 3
- u\_char **ak\_change\_indicator**: 1
- u\_char **n\_cids**
- uint16\_t **cids** [MAX\_NBR]
- u\_char **n\_said**s
- uint16\_t **said**s [MAX\_NBR]
- u\_char **n\_new\_bs**: 3
- mac802\_16\_mob\_bsho\_req\_mode\_new\_bs **new\_bs** [MAX\_NBR]
- u\_char **n\_current\_bs**: 3
- mac802\_16\_mob\_bsho\_req\_mode\_current\_bs **current\_bs** [MAX\_NBR]
- mac802\_16\_mob\_bsho\_rsp\_mode\_new\_bs2 **new\_bs2** [MAX\_NBR]
- mac802\_16\_mob\_bsho\_req\_mode\_new\_bs3 **new\_bs3** [MAX\_NBR]
- u\_char **action\_time**: 7

#### 3.31.1 Detailed Description

BSHO response frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.32 mac802\_16\_mob\_bsho\_rsp\_mode\_new\_bs2 Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bsid**
- u\_char **temp\_bsid**: 3
- uint16\_t **new\_cid** []

#### 3.32.1 Detailed Description

Structure for BSHO response

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.33 mac802\_16\_mob\_bsho\_rsp\_rec Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bsid**
- u\_char **preamble\_index**
- u\_char **service\_level\_prediction**
- u\_char **ho\_process\_optimization**
- u\_char **net\_assisted\_ho\_supported**: 1
- u\_char **ho\_id\_included\_indicator**: 1
- u\_char **ho\_id**
- u\_char **ho\_autho\_policy\_indicator**: 1
- u\_char **ho\_autho\_policy\_support**

#### 3.33.1 Detailed Description

Structure for BSHO response

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.34 mac802\_16\_mob\_ho\_ind\_bs Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char temp\_bsid: 3

#### 3.34.1 Detailed Description

Structure for Handover indication

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.35 mac802\_16\_mob\_ho\_ind\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **mode**: 2
- u\_char **ho\_ind\_type**: 2
- u\_char **rng\_param\_valid\_ind**: 2
- int **target\_bsid**
- u\_char **mdhofbss\_ind\_type**: 2
- u\_char **bsid**: 3
- u\_char **action\_time**
- u\_char **diversity\_set\_included**
- u\_char **anchor\_bsid**: 3
- u\_char **n\_bs**
- mac802\_16\_mob\_ho\_ind\_bs\_bs [MAX\_NBR]
- u\_char **preamble\_index**

#### 3.35.1 Detailed Description

HO indication frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.36 mac802\_16\_mob\_msho\_req\_bs\_index Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **neighbor\_bs\_index**
- u\_char **preamble\_index**
- u\_char **bs\_cinr\_mean**
- u\_char **bs\_rssi\_mean**
- u\_char **relative\_delay**
- u\_char **service\_level\_prediction**: 3
- u\_char **arrival\_time\_diff\_ind**: 1
- u\_char **arrival\_time\_diff**: 4

#### 3.36.1 Detailed Description

Structure for MSHO request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.37 mac802\_16\_mob\_msho\_req\_current\_bs Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **temp\_bsid**: 4
- u\_char **bs\_cinr\_mean**
- u\_char **bs\_rssi\_mean**
- u\_char **relative\_delay**
- u\_char **bs\_rtd**

#### 3.37.1 Detailed Description

Structure for MSHO request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.38 mac802\_16\_mob\_msho\_req\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- `u_char type`
- `u_char report_metric`
- `u_char n_new_bs_index`
- `u_char ccc_mob_nbr_adv`
- `mac802_16_mob_msho_req_bs_index bs_index [MAX_NBR]`
- `u_char n_new_bs_full`
- `mac802_16_mob_msho_req_bs_index bs_full [MAX_NBR]`
- `u_char n_current_bs`
- `mac802_16_mob_msho_req_current_bs bs_current [MAX_NBR]`

#### 3.38.1 Detailed Description

MSHO request frame

The documentation for this struct was generated from the following file:

- `mac802_16pkt.h`

### 3.39 mac802\_16\_mob\_nbr\_adv\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **skip\_opt\_field**
- u\_int32\_t **operatorID**: 24
- u\_char **ccc**
- u\_char **frag\_index**: 4
- u\_char **total\_frag**: 4
- u\_char **n\_neighbors**
- mac802\_16\_nbr\_adv\_info **nbr\_info** [MAX\_NBR]

#### 3.39.1 Detailed Description

Neighbor advertisement frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.40 mac802\_16\_mob\_scn\_rep\_bs\_full Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **neighbor\_bs\_id**
- u\_char **bs\_cinr\_mean**
- u\_char **bs\_rssi\_mean**
- u\_char **relative\_delay**

#### 3.40.1 Detailed Description

Measurements about neighbor BS using full address

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.41 mac802\_16\_mob\_scn\_rep\_bs\_index Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **neighbor\_bs\_index**
- u\_char **bs\_cinr\_mean**
- u\_char **bs\_rssi\_mean**
- u\_char **relative\_delay**

#### 3.41.1 Detailed Description

Measurements about neighbor BS using index

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.42 mac802\_16\_mob\_scn\_rep\_current\_bs Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **temp\_bsid**: 4
- u\_char **bs\_cinr\_mean**
- u\_char **bs\_rssi\_mean**
- u\_char **relative\_delay**
- u\_char **bs\_rtd**

#### 3.42.1 Detailed Description

Measurements about current BS

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.43 mac802\_16\_mob\_scn\_rep\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **report\_mode**: 1
- u\_char **comp\_nbr\_bsid\_ind**: 1
- u\_char **n\_current\_bs**: 3
- u\_char **report\_metric**: 8
- **mac802\_16\_mob\_scn\_rep\_current\_bs current\_bs** [MAX\_NBR]
- u\_char **n\_neighbor\_bs\_index**
- u\_char **ccc\_mob\_nbr\_adv**
- **mac802\_16\_mob\_scn\_rep\_bs\_index nbr\_bs\_index** [MAX\_NBR]
- u\_char **n\_recommended\_bs\_full**
- **mac802\_16\_mob\_scn\_rep\_bs\_full nbr\_bs\_full** [MAX\_NBR]

#### 3.43.1 Detailed Description

Scan report frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.44 mac802\_16\_mob\_scn\_req\_bs\_full Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **recommended\_bs\_id**
- u\_char **scanning\_type**: 3

##### 3.44.1 Detailed Description

Code BS using full address in scan request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.45 mac802\_16\_mob\_scn\_req\_bs\_index Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **neighbor\_bs\_index**
- u\_char **scanning\_type**: 3

#### 3.45.1 Detailed Description

Code BS using index in scan request

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.46 mac802\_16\_mob\_scn\_req\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **scan\_duration**
- u\_char **interleaving\_interval**
- u\_char **scan\_iteration**
- u\_char **n\_recommended\_bs\_index**
- u\_char **ccc**
- **mac802\_16\_mob\_scn\_req\_bs\_index rec\_bs\_index** [MAX\_NBR]
- u\_char **n\_recommended\_bs\_full**
- **mac802\_16\_mob\_scn\_req\_bs\_full rec\_bs\_full** [MAX\_NBR]

#### 3.46.1 Detailed Description

Scan request frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.47 mac802\_16\_mob\_scn\_rsp\_bs\_full Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- int **recommended\_bs\_id**
- u\_char **scanning\_type**: 3
- u\_char **rdv\_time**
- u\_char **cdma\_code**
- u\_char **transmission\_opp\_offset**

#### 3.47.1 Detailed Description

Code BS using full address in scan response

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.48 mac802\_16\_mob\_scn\_rsp\_bs\_index Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **neighbor\_bs\_index**
- u\_char **scanning\_type**: 3
- u\_char **rdv\_time**
- u\_char **cdma\_code**
- u\_char **transmission\_opp\_offset**

#### 3.48.1 Detailed Description

Code BS using index in scan response

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.49 mac802\_16\_mob\_scn\_rsp\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_char **scan\_duration**
- u\_char **report\_mode**: 2
- u\_char **report\_period**
- u\_char **report\_metric**
- u\_char **start\_frame**: 4
- u\_char **interleaving\_interval**
- u\_char **scan\_iteration**
- u\_char **n\_recommended\_bs\_index**
- u\_char **ccc\_mob\_nbr\_adv**
- mac802\_16\_mob\_scn\_rsp\_bs\_index **rec\_bs\_index** [MAX\_NBR]
- u\_char **n\_recommended\_bs\_full**
- mac802\_16\_mob\_scn\_rsp\_bs\_full **rec\_bs\_full** [MAX\_NBR]

### 3.49.1 Detailed Description

Scan response frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.50 mac802\_16\_nbr\_adv\_info Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **length**
- mac802\_16\_phy\_profile\_id **phy\_profile\_id**
- u\_char **fa\_index**
- u\_char **bs\_eirp**
- int **nbr\_bsid**
- u\_char **preamble\_index**
- u\_char **ho\_process\_opt**
- u\_char **sched\_srv\_supported**
- u\_char **dcd\_ccc**: 4
- u\_char **ucd\_ccc**: 4
- bool **dcd\_included**
- mac802\_16\_dcd\_frame **dcd\_settings**
- bool **ucd\_included**
- mac802\_16\_ucd\_frame **ucd\_settings**
- bool **phy\_included**
- mac802\_16\_phy\_mode\_id **phy\_mode\_id**

#### 3.50.1 Detailed Description

Information about a neighbor BS

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.51 mac802\_16\_phy\_mode\_id Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **bandwidth**: 7
- u\_char **fttsize**: 3
- u\_char **cp**: 2
- u\_char **duration\_code**: 4

#### 3.51.1 Detailed Description

Structure of physical mode ID

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.52 mac802\_16\_phy\_profile\_id Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **colocatedFA**: 1
- u\_char **FAconfig**: 1
- u\_char **timefreq\_synch**: 2
- u\_char **bs\_eirp**: 1
- u\_char **dcdudc\_ref**: 1
- u\_char **FAindex**: 1
- u\_char **trigger\_ref**: 1

### 3.52.1 Detailed Description

Structure of physical profile ID

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.53 mac802\_16\_reg\_req\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_char **ss\_mngmt\_support**
- u\_char **ip\_mngmt\_support**
- u\_int16\_t **uplink\_cid\_support**

#### 3.53.1 Detailed Description

Registration request frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.54 mac802\_16\_reg\_rsp\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **response**
- u\_char **ss\_mngmt\_support**
- u\_int16\_t **sec\_mngmt\_cid**

#### 3.54.1 Detailed Description

Registration response frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.55 mac802\_16\_rng\_req\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_char **dc\_id**
- u\_char **req\_dl\_burst\_profile**
- int **ss\_mac\_address**

#### 3.55.1 Detailed Description

Ranging request frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

### 3.56 mac802\_16\_rng\_rsp\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

#### Public Attributes

- u\_char **type**
- u\_char **uc\_id**
- u\_char **pw\_adjust**
- u\_int32\_t **freq\_adjust**
- u\_char **rng\_status**
- u\_int16\_t **dl\_op\_burst\_profile**
- int **ss\_mac\_address**
- u\_int16\_t **basic\_cid**
- u\_int16\_t **primary\_cid**
- u\_char **aas\_bc\_perm**

#### 3.56.1 Detailed Description

Ranging response frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.57 mac802\_16\_ucd\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_char **config\_change\_count**
- u\_char **rng\_backoff\_start**
- u\_char **rng\_backoff\_end**
- u\_char **req\_backoff\_start**
- u\_char **req\_backoff\_end**
- u\_int16\_t **bw\_req\_size**
- u\_int16\_t **rng\_req\_size**
- u\_int32\_t **nb\_prof**
- mac802\_16\_ucd\_profile **profiles** [MAX\_PROFILE]

### 3.57.1 Detailed Description

UCD frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.58 mac802\_16\_ucd\_profile Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **uiuc**: 4
- u\_char **fec**

#### 3.58.1 Detailed Description

Defines UCD profile

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.59 mac802\_16\_ul\_map\_frame Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **type**
- u\_char **ucid**
- u\_char **ucd\_count**
- u\_int32\_t **allocation\_start**
- u\_int32\_t **nb\_ies**
- **mac802\_16\_ulmap\_ie ies [MAX\_MAP\_IE]**

#### 3.59.1 Detailed Description

##### UL\_MAP frame

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.60 mac802\_16\_ulmap\_ie Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- `u_int16_t cid`
- `u_int16_t start_time: 11`
- `u_char sub_channel_index: 5`
- `u_char uiuc: 4`
- `u_int16_t duration: 11`
- `u_char midamble_rep: 2`
- `u_char extended_uiuc: 4`
- `u_char length: 4`
- `mac802_16_fast_ranging_ie fast_ranging`

### 3.60.1 Detailed Description

Defines UL\_MAP IE (see p464.)

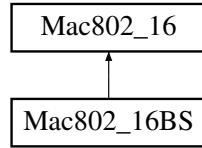
The documentation for this struct was generated from the following file:

- `mac802_16pkt.h`

## 3.61 Mac802\_16BS Class Reference

```
#include <mac802_16BS.h>
```

Inheritance diagram for Mac802\_16BS::



### Public Member Functions

- **Mac802\_16BS ()**
- int **command** (int argc, const char \*const \*argv)
- void **sendDown** (Packet \*p)
- void **transmit** (Packet \*p)
- void **sendUp** (Packet \*p)
- void **receive** ()

### Protected Member Functions

- void **init** ()
- void **init\_default\_connections** ()
- void **update\_watch** (StatWatch \*watch, double value)
- void **update\_throughput** (ThroughputWatch \*watch, double size)
- virtual void **expire** (timer\_id id)
- virtual void **start\_dlsubframe** ()
- virtual void **start\_ulsubframe** ()
- bool **isPeerScanning** (int nodeid)
- void **setCtrlAgent** (WimaxCtrlAgent \*agent)
- void **addNewFastRanging** (double time, int macAddr)
- void **send\_scan\_response** (mac802\_16\_mob\_scn\_rsp\_frame \*rsp, int cid)

### Protected Attributes

- bool **sendDCD**
- int **dlccc\_**
- bool **sendUCD**
- int **ulccc\_**

### Friends

- class **WimaxCtrlAgent**
- class **BSScheduler**

### 3.61.1 Detailed Description

Class implementing IEEE 802\_16 State machine at the BS

### 3.61.2 Constructor & Destructor Documentation

#### 3.61.2.1 Mac802\_16BS::Mac802\_16BS ()

Creates a Mac 802.16

### 3.61.3 Member Function Documentation

#### 3.61.3.1 void Mac802\_16BS::addNewFastRanging (double *time*, int *macAddr*) [protected]

Add a new Fast Ranging allocation

**Parameters:**

*time* The time when to allocate data

*macAddr* The MN address

#### 3.61.3.2 int Mac802\_16BS::command (int *argc*, const char \*const \* *argv*) [virtual]

Interface with the TCL script

**Parameters:**

*argc* The number of parameter

*argv* The list of parameters

Reimplemented from **Mac802\_16** (p.30).

#### 3.61.3.3 void Mac802\_16BS::expire (timer\_id *id*) [protected, virtual]

Called when a timer expires

**Parameters:**

*The* timer ID

Reimplemented from **Mac802\_16** (p.30).

#### 3.61.3.4 void Mac802\_16BS::init () [protected, virtual]

init the timers and state

Reimplemented from **Mac802\_16** (p.32).

#### 3.61.3.5 void Mac802\_16BS::init\_default\_connections () [protected]

Initialize default connection

**3.61.3.6 bool Mac802\_16BS::isPeerScanning (int *nodeid*) [protected]**

Finds out if the given station is currently scanning

**Parameters:**

*nodeid* The MS id

**3.61.3.7 void Mac802\_16BS::receive () [virtual]**

Process the packet after receiving last bit

Reimplemented from **Mac802\_16** (p. 32).

**3.61.3.8 void Mac802\_16BS::send\_scan\_response (mac802\_16\_mob\_scn\_rsp\_frame \* *rsp*, int *cid*) [protected]**

Send a scan response to the MN

**Parameters:**

*rsp* The response from the control The CID for the MN

**3.61.3.9 void Mac802\_16BS::sendDown (Packet \* *p*) [virtual]**

Process packets going out

**Parameters:**

*p* The packet to transmit

Reimplemented from **Mac802\_16** (p. 33).

**3.61.3.10 void Mac802\_16BS::setUp (Packet \* *p*) [virtual]**

Process incoming packets

**Parameters:**

*p* The received packet

Reimplemented from **Mac802\_16** (p. 33).

**3.61.3.11 void Mac802\_16BS::setCtrlAgent (WimaxCtrlAgent \* *agent*) [protected]**

Set the control agent

**Parameters:**

*agent* The control agent

**3.61.3.12 void Mac802\_16BS::start\_dlsubframe () [protected, virtual]**

Start a new DL subframe

Reimplemented from **Mac802\_16** (p. 34).

**3.61.3.13 void Mac802\_16BS::start\_ulsframe () [protected, virtual]**

Start a new UL subframe

Reimplemented from **Mac802\_16** (p. 34).

**3.61.3.14 void Mac802\_16BS::transmit (Packet \* p) [virtual]**

Process packets going out

**Parameters:**

*p* The packet to transmit

Reimplemented from **Mac802\_16** (p. 34).

**3.61.3.15 void Mac802\_16BS::update\_throughput (ThroughputWatch \* watch, double size) [protected, virtual]**

Update the given timer and check if thresholds are crossed

**Parameters:**

*watch* the stat watch to update

*size* the size of packet received

Reimplemented from **Mac802\_16** (p. 34).

**3.61.3.16 void Mac802\_16BS::update\_watch (StatWatch \* watch, double value) [protected, virtual]**

Update the given timer and check if thresholds are crossed

**Parameters:**

*watch* the stat watch to update

*value* the stat value

Reimplemented from **Mac802\_16** (p. 34).

### 3.61.4 Member Data Documentation

**3.61.4.1 int Mac802\_16BS::dlccc\_ [protected]**

DL configuration change count

**3.61.4.2 bool Mac802\_16BS::sendDCD [protected]**

Indicates if it is time to send a DCD message

**3.61.4.3 bool Mac802\_16BS::sendUCD [protected]**

Indicates if it is time to send a UCD message

**3.61.4.4 int Mac802\_16BS::ulccc\_ [protected]**

UL configuration change count

The documentation for this class was generated from the following files:

- mac802\_16BS.h
- mac802\_16BS.cc

## 3.62 Mac802\_16MIB Class Reference

```
#include <mac802_16.h>
```

### Public Member Functions

- `Mac802_16MIB (Mac802_16 *parent)`

### Public Attributes

- `int queue_length`
- `double frame_duration`
- `double dcd_interval`
- `double ucd_interval`
- `double init_rng_interval`
- `double lost_dlmap_interval`
- `double lost_ulmap_interval`
- `double t1_timeout`
- `double t2_timeout`
- `double t3_timeout`
- `double t6_timeout`
- `double t12_timeout`
- `double t16_timeout`
- `double t17_timeout`
- `double t21_timeout`
- `double t44_timeout`
- `u_int32_t contention_rng_retry`
- `u_int32_t invited_rng_retry`
- `u_int32_t request_retry`
- `u_int32_t reg_req_retry`
- `double tproc`
- `u_int32_t dsx_req_retry`
- `u_int32_t dsx_rsp_retry`
- `u_int32_t rng_backoff_start`
- `u_int32_t rng_backoff_stop`
- `u_int32_t bw_backoff_start`
- `u_int32_t bw_backoff_stop`
- `u_int32_t scan_duration`
- `u_int32_t interleaving`
- `u_int32_t scan_iteration`
- `u_int32_t max_dir_scan_time`
- `double nbr_adv_interval`
- `u_int32_t scan_req_retry`
- `double rxp_avg_alpha`
- `double lgd_factor`
- `double RXThreshold`
- `double client_timeout`

### 3.62.1 Detailed Description

MAC MIB

The documentation for this class was generated from the following files:

- mac802\_16.h
- mac802\_16.cc

## 3.63 Mac802\_16pkt Class Reference

```
#include <mac802_16pkt.h>
```

### Static Public Member Functions

- static int getMOB\_NBR\_ADV\_size (mac802\_16\_mob\_nbr\_adv\_frame \*frame)
- static int getMOB\_SCN\_REQ\_size (mac802\_16\_mob\_scn\_req\_frame \*frame)
- static int getMOB\_SCN\_RSP\_size (mac802\_16\_mob\_scn\_rsp\_frame \*frame)
- static int getMOB\_MSHO\_REQ\_size (mac802\_16\_mob\_msho\_req\_frame \*frame)
- static int getMOB\_BSHO\_RSP\_size (mac802\_16\_mob\_bsho\_rsp\_frame \*frame)
- static int getMOB\_HO\_IND\_size (mac802\_16\_mob\_ho\_ind\_frame \*frame)

#### 3.63.1 Detailed Description

This class contains helpers for manipulating 802.16 messages and getting the packet size

#### 3.63.2 Member Function Documentation

**3.63.2.1 int Mac802\_16pkt::getMOB\_BSHO\_RSP\_size  
(mac802\_16\_mob\_bsho\_rsp\_frame \* frame) [static]**

Return the size of the MOB\_BSHO-RSP

**Parameters:**

*frame* The frame

**3.63.2.2 int Mac802\_16pkt::getMOB\_HO\_IND\_size (mac802\_16\_mob\_ho\_-  
ind\_frame \* frame) [static]**

Return the size of the MOB\_HO-IND

**Parameters:**

*frame* The frame

**3.63.2.3 int Mac802\_16pkt::getMOB\_MSHO\_REQ\_size  
(mac802\_16\_mob\_msho\_req\_frame \* frame) [static]**

Return the size of the MOB\_MSHO-REQ

**Parameters:**

*frame* The frame

**3.63.2.4 int Mac802\_16pkt::getMOB\_NBR\_ADV\_size (mac802\_16\_mob\_-  
nbr\_adv\_frame \* *frame*) [static]**

Return the size of the MOB\_NBR-ADV frame

**Parameters:**

*frame* The frame

**3.63.2.5 int Mac802\_16pkt::getMOB\_SCN\_REQ\_size (mac802\_16\_mob\_scn\_-  
req\_frame \* *frame*) [static]**

Return the size of the MOB\_SCN-REQ

**Parameters:**

*frame* The frame

**3.63.2.6 int Mac802\_16pkt::getMOB\_SCN\_RSP\_size (mac802\_16\_mob\_scn\_-  
rsp\_frame \* *frame*) [static]**

Return the size of the MOB\_SCN-RSP

**Parameters:**

*frame* The frame

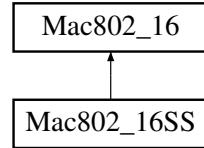
The documentation for this class was generated from the following files:

- mac802\_16pkt.h
- mac802\_16pkt.cc

## 3.64 Mac802\_16SS Class Reference

```
#include <mac802_16SS.h>
```

Inheritance diagram for Mac802\_16SS::



### Public Member Functions

- **Mac802\_16SS ()**
- int **command** (int argc, const char \*const \*argv)
- void **setMacState** (Mac802\_16State state)
- Mac802\_16State **getMacState** ()
- state\_info \* **backup\_state** ()
- void **restore\_state** (state\_info \*state)
- void **transmit** (Packet \*p)
- void **sendDown** (Packet \*p)
- void **sendUp** (Packet \*p)
- void **receive** ()

### Protected Member Functions

- void **init** ()
- void **init\_default\_connections** ()
- void **lost\_synch** ()
- void **start\_dlsubframe** ()
- void **start\_ulsubframe** ()
- void **resume\_scanning** ()
- void **pause\_scanning** ()
- void **update\_watch** (StatWatch \*watch, double value)
- void **update\_throughput** (ThroughputWatch \*watch, double size)
- virtual void **expire** (timer\_id id)

### Friends

- class **BwRequest**

#### 3.64.1 Detailed Description

Class implementing IEEE 802\_16 State Machine at the SS

### 3.64.2 Constructor & Destructor Documentation

#### 3.64.2.1 Mac802\_16SS::Mac802\_16SS ()

Creates a Mac 802.16

### 3.64.3 Member Function Documentation

#### 3.64.3.1 state\_info \* Mac802\_16SS::backup\_state ()

Creates a snapshot of the MAC's state and reset it

**Returns:**

The snapshot of the MAC's state

#### 3.64.3.2 int Mac802\_16SS::command (int argc, const char \*const \* argv) [virtual]

Interface with the TCL script

**Parameters:**

*argc* The number of parameter

*argv* The list of parameters

Reimplemented from **Mac802\_16** (p. 30).

#### 3.64.3.3 void Mac802\_16SS::expire (timer\_id id) [protected, virtual]

Called when a timer expires

**Parameters:**

*The* timer ID

Reimplemented from **Mac802\_16** (p. 30).

#### 3.64.3.4 Mac802\_16State Mac802\_16SS::getMacState ()

Return the mac state

**Returns:**

The new mac state

#### 3.64.3.5 void Mac802\_16SS::init () [protected, virtual]

init the timers and state

Reimplemented from **Mac802\_16** (p. 32).

**3.64.3.6 void Mac802\_16SS::init\_default\_connections () [protected]**

Initialize default connection

**3.64.3.7 void Mac802\_16SS::lost\_synch () [protected]**

Called when lost synchronization

**3.64.3.8 void Mac802\_16SS::pause\_scanning () [protected]**

Pause scanning

**3.64.3.9 void Mac802\_16SS::receive () [virtual]**

Process the packet after receiving last bit

Reimplemented from **Mac802\_16** (p. 32).

**3.64.3.10 void Mac802\_16SS::restore\_state (state\_info \* state)**

Restore the state of the Mac

**Parameters:**

*state* The state to restore

**3.64.3.11 void Mac802\_16SS::resume\_scanning () [protected]**

Start/Continue scanning

**3.64.3.12 void Mac802\_16SS::sendDown (Packet \* p) [virtual]**

Process packets going out

**Parameters:**

*p* The packet to transmit

Reimplemented from **Mac802\_16** (p. 33).

**3.64.3.13 void Mac802\_16SS::setUp (Packet \* p) [virtual]**

Process incoming packets

**Parameters:**

*p* The received packet

Reimplemented from **Mac802\_16** (p. 33).

**3.64.3.14 void Mac802\_16SS::setMacState (Mac802\_16State state)**

Set the mac state

**Parameters:**

*state* The new mac state

**3.64.3.15 void Mac802\_16SS::start\_dlsubframe () [protected, virtual]**

Start a new DL subframe

Reimplemented from **Mac802\_16** (p.34).

**3.64.3.16 void Mac802\_16SS::start\_ulsubframe () [protected, virtual]**

Start a new UL subframe

Reimplemented from **Mac802\_16** (p.34).

**3.64.3.17 void Mac802\_16SS::transmit (Packet \* p) [virtual]**

Process packets going out

**Parameters:**

*p* The packet to transmit

Reimplemented from **Mac802\_16** (p.34).

**3.64.3.18 void Mac802\_16SS::update\_throughput (ThroughputWatch \* watch, double size) [protected, virtual]**

Update the given timer and check if thresholds are crossed

**Parameters:**

*watch* the stat watch to update

*size* the size of packet received

Reimplemented from **Mac802\_16** (p.34).

**3.64.3.19 void Mac802\_16SS::update\_watch (StatWatch \* watch, double value) [protected, virtual]**

Update the given timer and check if thresholds are crossed

**Parameters:**

*watch* the stat watch to update

*value* the stat value

Reimplemented from **Mac802\_16** (p.34).

The documentation for this class was generated from the following files:

- mac802\_16SS.h
- mac802\_16SS.cc

## 3.65 NeighborDB Class Reference

```
#include <neighbordb.h>
```

### Public Member Functions

- `NeighborDB ()`
- `~NeighborDB ()`
- `void addNeighbor (WimaxNeighborEntry *nb)`
- `void removeNeighbor (int nbid)`
- `int getNbNeighbor ()`
- `WimaxNeighborEntry * getNeighbor (int nbid)`
- `WimaxNeighborEntry ** getNeighbors ()`

#### 3.65.1 Detailed Description

The class is used to store and manipulate the list of neighbors in a given node

#### 3.65.2 Constructor & Destructor Documentation

##### 3.65.2.1 NeighborDB::NeighborDB ()

Constructor

##### 3.65.2.2 NeighborDB::~NeighborDB ()

Destructor

#### 3.65.3 Member Function Documentation

##### 3.65.3.1 void NeighborDB::addNeighbor (WimaxNeighborEntry \* *nb*)

Add an entry in the database

**Parameters:**

*nb* The neighbor to add

##### 3.65.3.2 int NeighborDB::getNbNeighbor ()

Return the number of neighbor in the list

**Returns:**

the number of neighbor in the list

**3.65.3.3 WimaxNeighborEntry \* NeighborDB::getNeighbor (int *nbid*)**

Return the entry associated with the given node

**Parameters:**

*nbid* The neighbor id

**Returns:**

the entry for the given node or NULL

**3.65.3.4 WimaxNeighborEntry \*\* NeighborDB::getNeighbors ()**

Return a pointer to the list of all neighbors

**Returns:**

a pointer to the list of all neighbors

**3.65.3.5 void NeighborDB::removeNeighbor (int *nbid*)**

Remove the entry associated with the given node

**Parameters:**

*nbid* The neighbor id

The documentation for this class was generated from the following files:

- neighbordb.h
- neighbordb.cc

## 3.66 new\_client\_t Struct Reference

```
#include <mac802_16BS.h>
```

### Public Attributes

- int **cid**
- **new\_client\_t \* next**

#### 3.66.1 Detailed Description

Information about a new client

The documentation for this struct was generated from the following file:

- mac802\_16BS.h

## 3.67 OFDMPhy Class Reference

```
#include <ofdmphy.h>
```

### Public Member Functions

- void **setFrequency** (double freq)
- void **setModulation** (Ofdm\_mod\_rate modulation)
- Ofdm\_mod\_rate **getModulation** ()
- void **setTxPower** (double power)
- double **getTxPower** ()
- double **getPS** ()
- double **getSymbolTime** ()
- double **getTrxTime** (int, Ofdm\_mod\_rate)
- double **getTrxSymbolTime** (int, Ofdm\_mod\_rate)
- int **getMaxPktSize** (double nbsymbols, Ofdm\_mod\_rate)
- int **getSymbolPS** ()
- void **setMode** (Ofdm\_phy\_state mode)
- void **node\_on** ()
- void **node\_off** ()

### Protected Member Functions

- void **updateFs** ()
- void **sendDown** (Packet \*p)
- int **sendUp** (Packet \*p)

#### 3.67.1 Detailed Description

Class OFDMPhy Physical layer implementing OFDM

#### 3.67.2 Member Function Documentation

##### 3.67.2.1 int OFDMPhy::getMaxPktSize (double *nbsymbols*, Ofdm\_mod\_rate)

Return the maximum size in bytes that can be sent for the given nb of symbols and modulation

##### 3.67.2.2 Ofdm\_mod\_rate OFDMPhy::getModulation ()

Return the current modulation

##### 3.67.2.3 double OFDMPhy::getPS () [inline]

Return the duration of a PS (physical slot), unit for allocation time. Use Frame duration / PS to find the number of available slot per frame

**3.67.2.4 int OFDMPhy::getSymbolPS () [inline]**

Return the number of PS used by an OFDM symbol

**3.67.2.5 double OFDMPhy::getSymbolTime ()**

Return the OFDM symbol duration time

**3.67.2.6 double OFDMPhy::getTrxSymbolTime (int, Ofdm\_mod\_rate)**

Compute the transmission time using OFDM symbol as minimum allocation for a packet of size sdusize and using the given modulation

**3.67.2.7 double OFDMPhy::getTrxTime (int, Ofdm\_mod\_rate)**

Compute the transmission time for a packet of size sdusize and using the given modulation

**3.67.2.8 double OFDMPhy::getTxPower ()**

Return the current transmitting power

**3.67.2.9 void OFDMPhy::node\_off ()**

Deactivate node

**3.67.2.10 void OFDMPhy::node\_on ()**

Activate node

**3.67.2.11 void OFDMPhy::setFrequency (double *freq*)**

Change the frequency at which the phy is operating

**Parameters:**

*freq* The new frequency

**3.67.2.12 void OFDMPhy::setMode (Ofdm\_phy\_state *mode*)**

Set the mode for physical layer

**3.67.2.13 void OFDMPhy::setModulation (Ofdm\_mod\_rate *modulation*)**

Set the new modulation for the physical layer

**Parameters:**

*modulation* The new physical modulation

**3.67.2.14 void OFDMPhy::setTxPower (double *power*)**

Set the new transmitting power

**Parameters:**

*power* The new transmitting power

**3.67.2.15 void OFDMPhy::updateFs () [protected]**

Update the sampling frequency. Called after changing frequency BW

The documentation for this class was generated from the following files:

- ofdmphy.h
- ofdmphy.cc

## 3.68 pack\_subheader\_s Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- u\_char **fc**:2
- u\_int16\_t **sn**:11
- u\_int16\_t **length**:11

#### 3.68.1 Detailed Description

Packing subheader

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.69 PeerNode Class Reference

```
#include <peernode.h>
```

### Public Member Functions

- **PeerNode** (int index)
- int **getAddr** ()
- void **setBasic** (Connection \*i\_con, Connection \*o\_con)
- Connection \* **getBasic** (bool out)
- void **setPrimary** (Connection \*i\_con, Connection \*o\_con)
- Connection \* **getPrimary** (bool out)
- void **setSecondary** (Connection \*i\_con, Connection \*o\_con)
- Connection \* **getSecondary** (bool out)
- void **setInData** (Connection \*connection)
- void **setOutData** (Connection \*connection)
- Connection \* **getOutData** ()
- Connection \* **getInData** ()
- void **setRxTime** (double time)
- double **getRxTime** ()
- StatWatch \* **getStatWatch** ()
- bool **isGoingDown** ()
- void **setGoingDown** (bool status)
- int **getReqBw** ()
- int **getQueueLength** ()
- void **setDIUC** (int diuc)
- int **getDIUC** ()
- void **insert\_entry** (struct peerNode \*head)
- PeerNode \* **next\_entry** (void) const
- void **remove\_entry** ()

### Protected Member Functions

- LIST\_ENTRY (PeerNode) link

#### 3.69.1 Detailed Description

Class PeerNode Supports list

#### 3.69.2 Constructor & Destructor Documentation

##### 3.69.2.1 PeerNode::PeerNode (int *index*)

Constructor

**Parameters:**

*index* The Mac address of the peer node

### 3.69.3 Member Function Documentation

#### 3.69.3.1 int PeerNode::getAddr () [inline]

Return the address of the peer node

**Returns:**

The address of the peer node

#### 3.69.3.2 Connection\* PeerNode::getBasic (bool *out*) [inline]

Return the connection used for delay-intolerant messages

#### 3.69.3.3 int PeerNode::getDIUC ()

Get the requested downlink profile

**Returns:**

The downlink profile

#### 3.69.3.4 Connection\* PeerNode::getInData () [inline]

Return the connection used for data messages

#### 3.69.3.5 Connection\* PeerNode::getOutData () [inline]

Return the connection used for data messages

#### 3.69.3.6 Connection\* PeerNode::getPrimary (bool *out*) [inline]

Return the connection used for delay-tolerant messages

#### 3.69.3.7 int PeerNode::getQueueLength ()

Return the amount of data queued for this node

**Returns:**

The queued data for this node

#### 3.69.3.8 int PeerNode::getReqBw ()

Return the requested bandwidth for this node

**Returns:**

The requested bandwidth for this node

**3.69.3.9 double PeerNode::getRxTime ()**

Get the time the last packet was received

**Returns:**

The time the last packet was received

**3.69.3.10 Connection\* PeerNode::getSecondary (bool *out*) [inline]**

Return the connection used for standard-based messages

**3.69.3.11 StatWatch \* PeerNode::getStatWatch ()**

Return the stat watch

**Returns:**

The stat watch

**3.69.3.12 bool PeerNode::isGoingDown () [inline]**

Return true if the peer is going down

**Returns:**

true if the peer is going down

**3.69.3.13 void PeerNode::setBasic (Connection \* *i\_con*, Connection \* *o\_con*)**

Set the connection for delay-intolerant management messages

**Parameters:**

*i\_con* The connection used as basic for incoming

*o\_con* The connection used as basic for outgoing

**3.69.3.14 void PeerNode::setDIUC (int *diuc*)**

Set the requested downlink profile

**Parameters:**

*diuc* The downlink profile

**3.69.3.15 void PeerNode::setGoingDown (bool *status*) [inline]**

Set the status of going down

**Parameters:**

*status* The link going down status

**3.69.3.16 void PeerNode::setInData (Connection \* *connection*)**

Set the channel used for data messages

**Parameters:**

*connection*

**3.69.3.17 void PeerNode::setOutData (Connection \* *connection*)**

Set the channel used for data messages

**Parameters:**

*connection*

**3.69.3.18 void PeerNode::setPrimary (Connection \* *i\_con*, Connection \* *o\_con*)**

Set the connection for delay-tolerant management messages

**Parameters:**

*i\_con* The connection used as primary for incoming

*o\_con* The connection used as primary for outgoing

**3.69.3.19 void PeerNode::setRxTime (double *time*)**

Set the time the last packet was received

**Parameters:**

*time* The time the last packet was received

**3.69.3.20 void PeerNode::setSecondary (Connection \* *i\_con*, Connection \* *o\_con*)**

Set the channel used for standard-based messages

**Parameters:**

*i\_con* The connection used as secondary for incoming

*o\_con* The connection used as secondary for outgoing

The documentation for this class was generated from the following files:

- peernode.h
- peernode.cc

## 3.70 Phy802\_16MIB Class Reference

```
#include <mac802_16.h>
```

### Public Member Functions

- Phy802\_16MIB (Mac802\_16 \*parent)

### Public Attributes

- int **channel**
- double **fbandwidth**
- u\_int32\_t **ttg**
- u\_int32\_t **rtg**

#### 3.70.1 Detailed Description

##### PHY MIB

The documentation for this class was generated from the following files:

- mac802\_16.h
- mac802\_16.cc

## 3.71 phy\_info\_t Struct Reference

```
#include <mac802_16pkt.h>
```

### Public Attributes

- double **freq\_**
- Ofdm\_mod\_rate **modulation\_**
- double **g\_**

#### 3.71.1 Detailed Description

Structure containing physical layer information

The documentation for this struct was generated from the following file:

- mac802\_16pkt.h

## 3.72 scanning\_struct Struct Reference

```
#include <mac802_16SS.h>
```

### Public Attributes

- **mac802\_16\_mob\_scn\_rsp\_frame \* rsp**
- **sched\_state\_info scan\_state**
- **sched\_state\_info normal\_state**
- **int iteration**
- **WimaxScanIntervalTimer \* scn\_timer\_**
- **int count**
- **ss\_sub\_state substate**
- **WimaxNeighborEntry \* nbr**
- **WimaxRdvTimer \* rdv\_timers [2 \*MAX\_NBR]**
- **int nb\_rdv\_timers**
- **int serving\_bsid**
- **int handoff\_timeout**

### 3.72.1 Detailed Description

Data structure to store scanning information

The documentation for this struct was generated from the following file:

- mac802\_16SS.h

## 3.73 ServiceFlow Class Reference

```
#include <serviceflow.h>
```

### Public Member Functions

- **ServiceFlow** (SchedulingType\_t, ServiceFlowQoS \*)
- int **getID** ()
- void **setID** (int id)
- void **pickID** ()
- void **setScheduling** (SchedulingType\_t scheduling)
- SchedulingType\_t **getScheduling** ()
- void **setQoS** (ServiceFlowQoS \*qos)
- ServiceFlowQoS \* **getQoS** ()
- void **insert\_entry\_head** (struct serviceflow \*head)
- void **insert\_entry** (ServiceFlow \*elem)
- ServiceFlow \* **next\_entry** (void) const
- void **remove\_entry** ()

### Protected Member Functions

- LIST\_ENTRY (ServiceFlow) link

#### 3.73.1 Detailed Description

Class ServiceFlow The service flow identifies the service requirement for the associated connection

#### 3.73.2 Constructor & Destructor Documentation

##### 3.73.2.1 ServiceFlow::ServiceFlow (SchedulingType\_t, ServiceFlowQoS \*)

Constructor

#### 3.73.3 Member Function Documentation

##### 3.73.3.1 int ServiceFlow::getID () [inline]

Return the service flow id

**Returns:**

The service flow id. -1 if not yet assigned

##### 3.73.3.2 ServiceFlowQoS\* ServiceFlow::getQoS () [inline]

Return the QoS for this connection

**3.73.3.3 SchedulingType\_t ServiceFlow::getScheduling () [inline]**

Return the scheduling type for this service flow

**3.73.3.4 ServiceFlow::LIST\_ENTRY (ServiceFlow) [protected]**

Pointer to next in the list

**3.73.3.5 void ServiceFlow::pickID ()**

Pick the next available ID. Should be called by a BS to assign a unique ID

**3.73.3.6 void ServiceFlow::setID (int *id*)**

Assign an ID to the service flow

**Parameters:**

*id* The ID to set

**3.73.3.7 void ServiceFlow::setQoS (ServiceFlowQoS \* *qos*) [inline]**

Set the QoS for this flow

**Parameters:**

*qos* The new QoS for this flow

**3.73.3.8 void ServiceFlow::setScheduling (SchedulingType\_t *scheduling*) [inline]**

Set the scheduling mechanism for this flow

**Parameters:**

*scheduling* The scheduling type

The documentation for this class was generated from the following files:

- serviceflow.h
- serviceflow.cc

## 3.74 ServiceFlowHandler Class Reference

```
#include <serviceflowhandler.h>
```

### Public Member Functions

- void **setMac** (Mac802\_16 \*mac)
- void **process** (Packet \*p)
- ServiceFlow \* **addFlow** (ServiceFlowQoS \*qos)
- void **removeFlow** (int id)
- void **sendFlowRequest** (int index, bool incoming)

### Protected Member Functions

- void **processDSA\_req** (Packet \*p)
- void **processDSA\_rsp** (Packet \*p)
- void **processDSA\_ack** (Packet \*p)

#### 3.74.1 Detailed Description

Handler for service flows

#### 3.74.2 Member Function Documentation

##### 3.74.2.1 ServiceFlow \* ServiceFlowHandler::addFlow (ServiceFlowQoS \* *qos*)

Add a flow

###### Parameters:

*qos* The qos for the new connection

##### 3.74.2.2 void ServiceFlowHandler::process (Packet \* *p*)

Process the given packet. Only service related packets must be sent here.

###### Parameters:

*p* The packet to process

##### 3.74.2.3 void ServiceFlowHandler::processDSA\_ack (Packet \* *p*) [protected]

process a flow request

###### Parameters:

*p* The received response

**3.74.2.4 void ServiceFlowHandler::processDSA\_req (Packet \* *p*) [protected]**

process a flow request

**Parameters:**

*p* The received request

**3.74.2.5 void ServiceFlowHandler::processDSA\_rsp (Packet \* *p*) [protected]**

process a flow response

**Parameters:**

*p* The received response

**3.74.2.6 void ServiceFlowHandler::removeFlow (int *id*)**

Remove a flow

**Parameters:**

*id* The flow ID

**3.74.2.7 void ServiceFlowHandler::sendFlowRequest (int *index*, bool *incoming*)**

Send a flow request to the given node

**Parameters:**

*index* The node address

*incoming* The flow direction

The documentation for this class was generated from the following files:

- serviceflowhandler.h
- serviceflowhandler.cc

## 3.75 ServiceFlowQoS Class Reference

```
#include <serviceflowqos.h>
```

### Public Member Functions

- **ServiceFlowQoS** (int delay, int datarate, int burstsize)
- double **getDelay** ()
- double **getDatarate** ()
- int **getBurstSize** ()
- void **setDelay** (double delay)
- void **setDatarate** (double datarate)
- void **setBurstSize** (int size)

#### 3.75.1 Detailed Description

Class ServiceFlowQoS Defines Qos requirements for the flows

#### 3.75.2 Constructor & Destructor Documentation

##### 3.75.2.1 ServiceFlowQoS::ServiceFlowQoS (int *delay*, int *datarate*, int *burstsize*)

Constructor

**Parameters:**

*delay* The maximum supported delay for the connection

*datarate* Average datarate

*burstsize* Size of each burst

#### 3.75.3 Member Function Documentation

##### 3.75.3.1 int ServiceFlowQoS::getBurstSize () [inline]

Return the burst size

##### 3.75.3.2 double ServiceFlowQoS::getDatarate () [inline]

Return the average datarate

##### 3.75.3.3 double ServiceFlowQoS::getDelay () [inline]

Return the maximum delay supported by the connection

##### 3.75.3.4 void ServiceFlowQoS::setBurstSize (int *size*) [inline]

Set the burst size for the connection

**Parameters:**

*size* The number of byte sent for each burst

**3.75.3.5 void ServiceFlowQoS::setDatarate (double *datarate*) [inline]**

Set the average datarate for the connection

**Parameters:**

*datarate* The average datarate

**3.75.3.6 void ServiceFlowQoS::setDelay (double *delay*) [inline]**

Set the maximum delay supported by the connection

**Parameters:**

*delay* The new delay

The documentation for this class was generated from the following files:

- serviceflowqos.h
- serviceflowqos.cc

## 3.76 state\_info Struct Reference

```
#include <mac802_16SS.h>
```

### Public Attributes

- Mac802\_16State **state**
- int **bs\_id**
- double **frameduration**
- int **frame\_number**
- int **channel**
- ConnectionManager \* **connectionManager**
- ServiceFlowHandler \* **serviceFlowHandler**
- peerNode \* **peer\_list**
- int **nb\_peer**

### 3.76.1 Detailed Description

Data structure to store MAC state

The documentation for this struct was generated from the following file:

- mac802\_16SS.h

## 3.77 StatTimer Class Reference

```
#include <mac802_16.h>
```

### Public Member Functions

- **StatTimer (Mac802\_16 \*mac, ThroughputWatch \*watch)**
- **void expire (Event \*)**
- **void set\_timer\_interval (double ti)**

#### 3.77.1 Detailed Description

Class to poll stats

The documentation for this class was generated from the following file:

- mac802\_16.h

## 3.78 T17Element Class Reference

```
#include <mac802_16BS.h>
```

### Public Member Functions

- **T17Element** (**Mac802\_16** \*mac, int index)
- int **index** ()
- int **paused** ()
- void **cancel** ()
- void **insert\_entry** (struct t17element \*head)
- **T17Element** \* **next\_entry** (void) const
- void **remove\_entry** ()

### Protected Member Functions

- **LIST\_ENTRY** (**T17Element**) **link**

#### 3.78.1 Detailed Description

Object to handle timer t17

The documentation for this class was generated from the following file:

- mac802\_16BS.h

## 3.79 UlTimer Class Reference

```
#include <mac802_16timer.h>
```

### Public Member Functions

- **UlTimer (Mac802\_16 \*m)**
- void **expire (Event \*e)**

#### 3.79.1 Detailed Description

Timer to indicate a new uplink frame

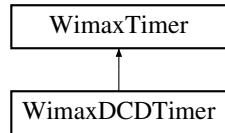
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.80 WimaxDCDTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxDCDTimer::



### Public Member Functions

- **WimaxDCDTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.80.1 Detailed Description

Timer for DCD interval

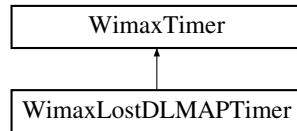
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.81 WimaxLostDLMAPTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxLostDLMAPTimer::



### Public Member Functions

- **WimaxLostDLMAPTimer (Mac802\_16 \*m)**
- **void handle (Event \*e)**

#### 3.81.1 Detailed Description

Timer for Lost DL-MAP interval

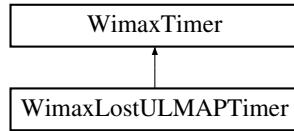
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.82 WimaxLostULMAPTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxLostULMAPTimer::



### Public Member Functions

- **WimaxLostULMAPTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.82.1 Detailed Description

Timer for Lost UL-MAP interval

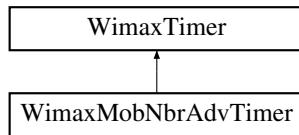
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

### 3.83 WimaxMobNbrAdvTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxMobNbrAdvTimer::



#### Public Member Functions

- **WimaxMobNbrAdvTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

##### 3.83.1 Detailed Description

Timer for neighbor advertisement interval

The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.84 WimaxNeighborEntry Class Reference

```
#include <wimaxneighborentry.h>
```

### Public Member Functions

- **WimaxNeighborEntry (int id)**
- **~WimaxNeighborEntry ()**
- **int getID ()**
- **void setNbrAdvMessage (mac802\_16\_nbr\_adv\_info \*frame)**
- **mac802\_16\_nbr\_adv\_info \* getNbrAdvMessage ()**
- **void setDCD (mac802\_16\_dcd\_frame \*frame)**
- **mac802\_16\_dcd\_frame \* getDCD ()**
- **void setUCD (mac802\_16\_ucd\_frame \*frame)**
- **mac802\_16\_ucd\_frame \* getUCD ()**
- **void setRangingRsp (mac802\_16\_rng\_rsp\_frame \*frame)**
- **mac802\_16\_rng\_rsp\_frame \* getRangingRsp ()**
- **void setDetected (bool detected)**
- **bool isDetected ()**
- **sched\_state\_info \* getState ()**

### 3.84.1 Detailed Description

Store information about a neighboring BS.

### 3.84.2 Constructor & Destructor Documentation

#### 3.84.2.1 WimaxNeighborEntry::WimaxNeighborEntry (int *id*)

Constructor

#### 3.84.2.2 WimaxNeighborEntry::~WimaxNeighborEntry ()

Destructor

### 3.84.3 Member Function Documentation

#### 3.84.3.1 mac802\_16\_dcd\_frame \* WimaxNeighborEntry::getDCD ()

Get the DCD message received during scanning

**Returns:**

the DCD message received

**3.84.3.2 int WimaxNeighborEntry::getID ()**

Return the address of the neighbor of this entry

**Returns:**

the address of the neighbor of this entry

**3.84.3.3 mac802\_16\_nbr\_adv\_info \* WimaxNeighborEntry::getNbrAdvMessage ()**

Return the neighbor advertisement message

**Parameters:**

*frame* The advertisement message

**3.84.3.4 mac802\_16\_rng\_rsp\_frame \* WimaxNeighborEntry::getRangingRsp ()**

Get the DCD message received during scanning

**Returns:**

the DCD message received

**3.84.3.5 sched\_state\_info \* WimaxNeighborEntry::getState ()**

Get the MAC state associated with this neighbor

**Returns:**

the MAC state associated with this neighbor

**3.84.3.6 mac802\_16\_ucd\_frame \* WimaxNeighborEntry::getUCD ()**

Get the DCD message received during scanning

**Returns:**

the DCD message received

**3.84.3.7 bool WimaxNeighborEntry::isDetected ()**

Indicates the neighbor as being detected

**Returns:**

indication if the neighbor has been detected

**3.84.3.8 void WimaxNeighborEntry::setDCD (mac802\_16\_dcd\_frame \* *frame*)**

Set the DCD message received during scanning

**Parameters:**

*dcd* the DCD message received

**3.84.3.9 void WimaxNeighborEntry::setDetected (bool *detected*)**

Mark the neighbor as being detected

**Parameters:**

*detected* indicate if the neighbor has been detected

**3.84.3.10 void WimaxNeighborEntry::setNbrAdvMessage  
(mac802\_16\_nbr\_adv\_info \* *frame*)**

Set the neighbor advertisement message

**Parameters:**

*frame* The advertisement message

**3.84.3.11 void WimaxNeighborEntry::setRangingRsp (mac802\_16\_rng\_rsp\_-  
frame \* *frame*)**

Set the UCD message received during scanning

**Parameters:**

*dcd* the DCD message received

**3.84.3.12 void WimaxNeighborEntry::setUCD (mac802\_16\_ucd\_frame \* *frame*)**

Set the UCD message received during scanning

**Parameters:**

*dcd* the DCD message received

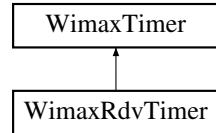
The documentation for this class was generated from the following files:

- wimaxneighboreentry.h
- wimaxneighboreentry.cc

## 3.85 WimaxRdvTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxRdvTimer::



### Public Member Functions

- **WimaxRdvTimer** (**Mac802\_16** \*m, int channel)
- void **handle** (Event \*e)

#### 3.85.1 Detailed Description

Timer for rendez-vous with target BSs

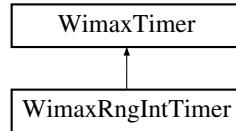
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.86 WimaxRngIntTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxRngIntTimer::



### Public Member Functions

- **WimaxRngIntTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.86.1 Detailed Description

Timer for initial ranging regions interval

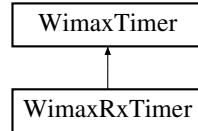
The documentation for this class was generated from the following file:

- mac802\_16timer.h

## 3.87 WimaxRxTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxRxTimer::



### Public Member Functions

- **WimaxRxTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.87.1 Detailed Description

Timer for receiving a packet

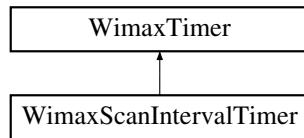
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.88 WimaxScanIntervalTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxScanIntervalTimer::



### Public Member Functions

- **WimaxScanIntervalTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.88.1 Detailed Description

Timer for scan interval : timer for scanning

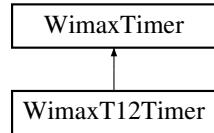
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.89 WimaxT12Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT12Timer::



### Public Member Functions

- **WimaxT12Timer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.89.1 Detailed Description

Timer for T12 : wait for UCD descriptor

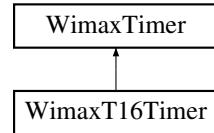
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.90 WimaxT16Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT16Timer::



### Public Member Functions

- **WimaxT16Timer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.90.1 Detailed Description

Timer for T16 : wait for bw request grant

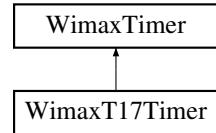
The documentation for this class was generated from the following file:

- mac802\_16timer.h

## 3.91 WimaxT17Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT17Timer::



### Public Member Functions

- **WimaxT17Timer (Mac802\_16 \*m, int peerIndex)**
- **void handle (Event \*e)**

#### 3.91.1 Detailed Description

Timer for T17 : wait for SS to register

#### 3.91.2 Member Function Documentation

##### 3.91.2.1 void WimaxT17Timer::handle (Event \* e) [virtual]

The node did not send a registration: release and age out Basic and Primary CIDs  
Implements **WimaxTimer** (p. 144).

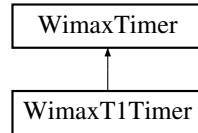
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.92 WimaxT1Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT1Timer::



### Public Member Functions

- **WimaxT1Timer (Mac802\_16 \*m)**
- **void handle (Event \*e)**

#### 3.92.1 Detailed Description

Timer for T1 : wait for DCD timeout

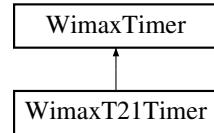
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.93 WimaxT21Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT21Timer::



### Public Member Functions

- **WimaxT21Timer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.93.1 Detailed Description

Timer for T21 : time the station searches for DL-MAP on a channel

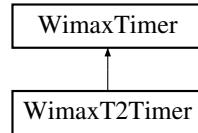
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.94 WimaxT2Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT2Timer::



### Public Member Functions

- **WimaxT2Timer (Mac802\_16 \*m)**
- **void handle (Event \*e)**

#### 3.94.1 Detailed Description

Timer for T2 : wait for broadcast ranging timeout

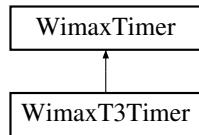
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.95 WimaxT3Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT3Timer::



### Public Member Functions

- **WimaxT3Timer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.95.1 Detailed Description

Timer for T3 : ranging response timeout

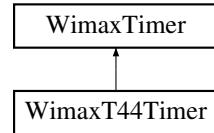
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.96 WimaxT44Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT44Timer::



### Public Member Functions

- **WimaxT44Timer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.96.1 Detailed Description

Timer for T44 : wait for BS to send MOB\_SCN-REP

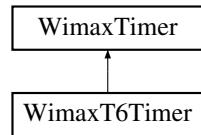
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.97 WimaxT6Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT6Timer::



### Public Member Functions

- **WimaxT6Timer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.97.1 Detailed Description

Timer for T6 : wait for registration response

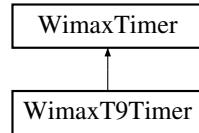
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.98 WimaxT9Timer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxT9Timer::



### Public Member Functions

- **WimaxT9Timer (Mac802\_16 \*m)**
- **void handle (Event \*e)**

#### 3.98.1 Detailed Description

Timer for T9 : registration timeout

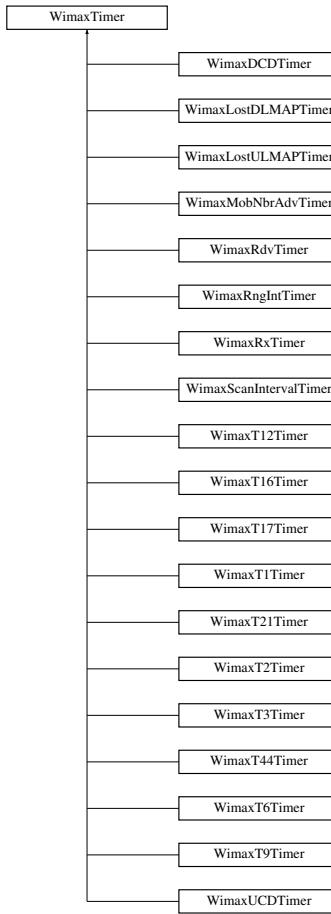
The documentation for this class was generated from the following file:

- mac802\_16timer.h

## 3.99 WimaxTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxTimer::



### Public Member Functions

- **WimaxTimer (Mac802\_16 \*m)**
- virtual void **handle** (Event \*e)=0
- virtual void **start** (double time)
- virtual void **stop** (void)
- void **pause** (void)
- void **resume** (void)
- int **busy** (void)
- int **paused** (void)
- double **expire** (void)

### Protected Attributes

- **Mac802\_16 \* mac**

- int **busy\_**
- int **paused\_**
- Event **intr**
- double **stime**
- double **rtime**

### 3.99.1 Detailed Description

Super class for timers used in wimax

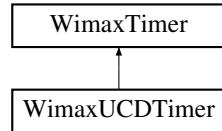
The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

## 3.100 WimaxUCDTimer Class Reference

```
#include <mac802_16timer.h>
```

Inheritance diagram for WimaxUCDTimer::



### Public Member Functions

- **WimaxUCDTimer (Mac802\_16 \*m)**
- void **handle (Event \*e)**

#### 3.100.1 Detailed Description

Timer for UCD interval

The documentation for this class was generated from the following files:

- mac802\_16timer.h
- mac802\_16timer.cc

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